

In the Claims:

1. (Currently Amended) Apparatus for automatically constructing a computerized quantifiable model of a real life system, the apparatus comprising:

an object definer software module for automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said user input representing an element of the relating-to behavior of said real life system,

a relationship definer software module for automatically converting additional digitized user input into relationships electrically associated with said cells ~~such that each said relationships is associatable with said cells~~ via one of said inputs and outputs, said additional digitized user input also relating to behavior of said real life system,

a quantifier software module for analyzing a data set to be modeled to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, thereby to generate a computerized quantitative model, said quantitative model being [[a]] predictive model of said real life system, and producing [[for]] automatic decision outputs making-to said real life systems to thereby affect in-relation-to said real life system.

2. (Currently Amended) Apparatus according to claim 1, further comprising a verifier software module for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

3. (Currently Amended) Apparatus according to claim 1, wherein said quantifier comprises a statistical data miner software module.

4. (Original) Apparatus according to claim 1, wherein said quantifier comprises any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART),

chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

5. (Original) Apparatus according to claim 1, wherein said data is a predetermined empirical data set.

6. (Original) Apparatus according to claim 1, wherein said data is a preobtained empirical data set describing any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

7. (Canceled)

8. (Currently Amended) Apparatus for automatic procedure for studying a process having an electrically associated empirical data set, the apparatus comprising:

an object definer software module for automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said digitized user input representing an element of the ~~relates to~~ behavior of a real life system,

a relationship definer software module for automatically converting additional digitized user input into relationships electrically associated with said cells ~~such that each said relationships is associatable with said cells via one of said inputs and outputs, said additional digitized user input relates to behavior of a real life system, and~~

a quantifier software module for analyzing said associated empirical data set to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, thereby to generate a computerized quantitative model, said quantitative model is a predictive model of said real life system usable for automatic decision making ~~in relation to to thereby affect said real life system.~~

9. (Currently Amended) Apparatus according to claim 8, further comprising a verifier software module for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

10. (Original) Apparatus according to claim 8, wherein said quantifier comprises a statistical data miner.

11. (Original) Apparatus according to claim 8, wherein said quantifier comprises functionality for any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

12. (Original) Apparatus according to claim 8, wherein said data is a predetermined empirical data set of said process.

13. (Original) Apparatus according to claim 8, wherein said process comprises any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

14. (Currently Amended) Apparatus according to claim 8, wherein said quantitative model is a predictive model usable for producing automatic decision making outputs to said real life system to thereby affect in relation to said real life system.

15. (Currently Amended) Apparatus for constructing a computerized predictive model for a process, said process is part of ~~relating to~~ a real life system, the apparatus comprising:

an object definer software module for automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said digitized user representing an element of the ~~relating to~~ behavior of said real life system,

a relationship definer software module for automatically converting additional digitized user input into relationships electrically associated with said cells such that each of said relationships is associatable with said cells via one of said inputs and outputs, said additional user input relates to behavior of said real life system,

a quantifier software module for analyzing a data set relating to said process to be modeled to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, thereby to generate a model predictive of said process.

16. (Currently Amended) Apparatus according to claim 15, further comprising a verifier software module for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

17. (Currently Amended) Apparatus according to claim 15, wherein said quantifier comprises a statistical data miner software module.

18. (Original) Apparatus according to claim 15, wherein said quantifier comprises functionality for any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

19. (Original) Apparatus according to claim 15, wherein said data is a predetermined empirical data set of said process.

20. (Original) Apparatus according to claim 15, wherein said process comprises any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

21. (Original) Apparatus according to claim 15, further comprising an automatic decision maker for using said predictive model together with state readings of said process to make feed forward decisions to control said process.

22. (Previously Presented) Apparatus according to claim 15, wherein said quantitative model is a predictive model usable for decision making in relation to said process.

23. (Currently Amended) Apparatus for automatic ~~reduced~~ reduction of dimension data mining, using a computerized quantifiable model of a real life system, comprising:

an object definer software module for automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said digitized user input representing an element of the ~~relating to~~ behavior of said real life system,

a relationship definer software model for automatically converting additional digitized user input into relationships electrically associated with said cells such that each of said relationships is associatable with said cells via one of said inputs and outputs, said additional user input representing an element of the ~~relating to~~ behavior of said real life system,

a quantifier software model for analyzing a data set relating to a process to be modeled comprising a selective data finder to find data items electrically associated with said relationships and ignore data items not related to said relationships, said quantifier being operable to use said found data to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, said process takes action in ~~relating to~~ said real life system.

24. (Currently Amended) Apparatus according to claim 23, further comprising a verifier software module for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

25. (Currently Amended) Apparatus according to claim 23, wherein said quantifier comprises a statistical data miner software module.

26. (Original) Apparatus according to claim 23, wherein said quantifier comprises functionality for any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

27. (Original) Apparatus according to claim 23, wherein said data is a predetermined empirical data set of said process.

28. (Original) Apparatus according to claim 23, wherein said process comprises any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

29. (Currently Amended) A method of constructing a computerized quantifiable model of a real life system, comprising:

automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said user input representing an element of the ~~relating to~~ behavior of said real life system,

automatically converting additional digitized user input into relationships electrically associated with said cells such that each said relationship is electrically

associated with said cells via one of said inputs and outputs, said additional user input representing an element of the behavior of said real life system,

analyzing a data set to be modeled to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model, said quantitative model being a predictive model of said real life system, usable for producing automatic decision outputs to said real life system-making, to thereby affect in relation of said real life system.

30. (Currently Amended) A method for automatic reduction of dimension data mining, using a computerized quantifiable model of a real life system, comprising:

automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said user input representing an element of the behavior of said real life system,

automatically converting additional digitized user input into relationships electrically associated with said cells such that each said relationship is electrically associated with said cells via one of said inputs and outputs, said additional user input representing an element of the relates to behavior of said real life system,

analyzing a data set relating to a process to be modeled comprising a finding data items electrically associated with said relationships and ignoring data items not related to said relationships, and using said found data to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, said quantitative model being a predictive model of said real life system usable for providing automatic decision outputs to said real life system making in relation to thereby affect said real life system.

31. (Currently Amended) A knowledge engineering software tool for verifying an alleged relationship pattern within a plurality of digital objects, said objects representing elements in relating to a real life system, the tool comprising

a graphical object representation comprising a graphical symbolization of the objects, the objects representing being related to an element of the behavior of said

real life system, and assumed interrelationships, said graphical symbolization including a plurality of interconnection cells each representing one of said objects, and inputs and outputs electrically associated therewith, each qualitatively representing an alleged relationship, and

a quantifier software module for analyzing a data set of said objects to assign quantitative values to said relationships and to electrically associate said quantitative values with said alleged relationships, thereby to verify said alleged relationships.

32. (Currently Amended) The knowledge engineering tool as in claim 31, wherein said quantifier comprises a selective data finder to find data items electrically associated with said relationships and ignore data items not related to said relationships such that only said found data are used in assigning quantitative values to said relationships and associating said quantitative values with said associated inputs and outputs..

33. (Original) The knowledge engineering tool as in claim 31 further comprising automatic initial layout functionality for arranging said inputs and outputs as interconnections between said cells and independent inputs and independent outputs in accordance with an a priori structural knowledge of said system.

34. (Original) The knowledge engineering tool as in claim 33 wherein said automatic initial layout functionality is configured to derive layout information from any one of a group consisting of process flow diagrams, process maps, structured questionnaire charts and layout drawings of said system.

35. (Original) The knowledge engineering tool as in claim 31 wherein at least one of said inputs is selected from the group consisting of a measurable input and a controllable input.

36. (Original) The knowledge engineering tool as in claim 31, wherein an output of a first of said interconnection cells comprises an input to a second of said interconnection cells.

37. (Original) The knowledge engineering tool as in claim 36 wherein said output is a controllable output to said first interconnection cell and a measurable input to said second interconnection cell.

38. (Currently Amended) A machine readable storage device, carrying real life system data for the construction of:

an object definer software module for automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said user input reflect the ~~relates to~~ behavior of said real life system,

a relationship definer software module for automatically converting additional digitized user input into relationships electrically associated with said cells ~~such that each said relationships is associatable with said cells via one of said inputs and outputs,~~ said additional user input representing an element of the ~~relates to~~ behavior of said real life system, and

a quantifier software module for analyzing a data set to be modeled to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model, said quantitative model is a predictive model usable for producing automatic decision making outputs to said real life system, ~~in relation to, to thereby affect~~ said real life system.

39. (Canceled)

40. (Currently Amended) Data mining apparatus for using empirical data to create a computerized model of a process, said process is part of ~~relating to a~~ real life system, comprising:

a data source storage device for storing data relating to said process,

a digitized functional map for describing said process in terms of expected relationships,

a relationship quantifier software module, connected between said data source storage and said functional process map, for utilizing data in said data storage to electrically associate quantities with said expected relationships,

thereby to provide quantified relationships to said functional map, thereby to model said process, and predict the behavior of said process.

41. (Currently Amended) Apparatus according to claim 40, further comprising a digitized functional map input unit for allowing users to define said expected relationships, thereby to provide said functional map.

42. (Currently Amended) Apparatus according to claim 40, further comprising a relationship validator software module electrically associated with said relationship quantifier to delete relationships from said model having quantities not reaching a predetermined threshold.

43. (Currently Amended) Apparatus for automatic procedure of obtaining new information regarding a process, said process is part of relating to a real life system and having an electrically associated empirical data set, the apparatus comprising:

an object definer software module for automatically converting digitized user input into at least one electrically stored cell having inputs and outputs, said user input relates to behavior of said process,

a relationship definer software module for automatically converting additional digitized user input into relationships electrically associated with said cells ~~such that each said relationships is associatable with said cells via one of said inputs and outputs~~, said additional user input relates to behavior of said process,

a quantifier software module for analyzing said associated empirical data set to assign quantitative values to said relationships and to electrically associate said quantitative values with said associated inputs and outputs, thereby to generate a quantitative model, said quantitative values comprising new information of said process,

said quantitative model being a predictive model usable for decision making in relation to said process.

44. (Currently Amended) Apparatus according to claim 43, further comprising a verifier software module for verifying at least one relationship, said verifier comprising determination functionality for determining whether said associated quantitative value is above a threshold value and deletion functionality for deleting said associated input or output if said quantitative value is below said threshold value.

45. (Original) Apparatus according to claim 43, wherein said quantifier comprises a statistical data miner.

46. (Original) Apparatus according to claim 43, wherein said quantifier comprises functionality for any one of a group including: linear regression, nearest neighbor, clustering, process output empirical modeling (POEM), classification and regression tree (CART), chi-square automatic interaction detector (CHAID) and neural network empirical modeling.

47. (Original) Apparatus according to claim 43, wherein said data is a predetermined empirical data set of said process.

48. (Original) Apparatus according to claim 43, wherein said process comprises any one of a group comprising a biological process, sociological process, a psychological process, a chemical process, a physical process and a manufacturing process.

49. (Currently Amended) Method for automated decision-making, ~~in relation to~~ for a real life system decisions, by a computer comprising the steps of:

- (i) Automatic modeling of relations between a plurality of digital objects, each object among said plurality of objects having at least one outcome, each digital object among said plurality of

objects being subjected to at least one influential factor possibly affecting said at least one outcome, said objects representing ~~relate to~~ behavior of an element of said real life system;

- (ii) automatic data mining in datasets associated with said modeled relations between said at least one outcome and said at least one influential factor of at least one object among said plurality of objects;
- (iii) building a computerized quantitative model to predict a score for said at least one outcome, said quantitative model is a predictive model usable for decision making, in respect to said real life system, and
- (iv) making a decision, implemental ~~in relation to~~ thereby affect said real life system, according to said score of said at least one outcome of said at least one object.